Sunshine Act Meetings

Federal Register
Vol. 50, No. 145
Monday, July 29, 1985

This section of the FEDERAL REGISTER contains notices of meetings published under the "Government in the Sunshine Act" (Pub. L. 94-409) 5 U.S.C. 552b(e)(3).

CONTENTS

1

CONSUMER PRODUCT SAFETY COMMISSION

TIME AND DATE: 9:30 a.m., Wednesday, July 31, 1985.

LOCATION: Third Floor Hearing Room, 1111-18th Street, NW., Washington, D.C.

STATUS:

MATTERS TO BE CONSIDERED:

Open to the Public

1. Fire Toxicity: Status

The staff will brief the Commission on the status of the priority project on Fire Combustion Toxicity.

Closed to the Public

2. Enforcement Matter OS# 4665

The Commission and staff will discuss Enforcement Matter OS# 4665.

FOR A RECORDED MESSAGE CONTAINING THE LATEST AGENDA INFORMATION, CALL: (301) 492-5709.

CONTACT PERSON FOR ADDITIONAL INFORMATION: Sheldon D. Butts, Office of the Secretary, 5401 Westbard Ave., Bethesda, Md. 20207, (301) 492-6800.

Sheldon D. Butts,

Deputy Secretary.

July 25, 1985.

[FR Doc. 85-17991 Filed 7-25-85; 12:38 pm]

BILLING CODE 6355-01-M

2

FEDERAL DEPOSIT INSURANCE CORPORATION

Pursuant to the provisions of the "Government in the Sunshine Act" (5 U.S.C. 552b), notice is hereby given at 7:00 p.m. on Tuesday, July 23, 1985, the Board of Directors of the Federal Deposit Insurance Corporation met in closed session, by telephone conference call, to:

(A)(1) receive bids for the purchase of certain assets of and the assumption of the liability to pay deposits made in the First National Bank of Onaga, Onaga, Kansas, which was closed by the Acting Comptroller of the Currency on Tuesday, July 23, 1985; (2) accept the bid for the transaction submitted by First National Bank of Onaga, Onaga, Kansas, a *de nova* bank; and (3) provide such financial assistance, pursuant to section 13(c)(2) of the Federal Deposit Insurance Act (12 U.S.C. 1823(c)(2)), as was necessary to facilitate the purchase and assumption transaction; and

(B)(1) receive bids for the purchase of certain assets of and the assumption of the liability to pay deposits made in First National Bank of Glenrock, Glenrock, Wyoming, which was closed by the Acting Comptroller of the Currency on Tuesday, July 23, 1985; (2) accept the bid for the transaction submitted by National Bank of Glenrock, Glenrock, Wyoming, a *de nova* bank; (3) provide such financial assistance, pursuant to section 13(c)(2) of the Federal Deposit Insurance Act (12 U.S.C. 1823(c)(2)), as was necessary to facilitate the purchase and assumption transaction.

In calling the meeting, the Board determined, on motion of Chairman William M. Isaac, seconded by Director Irvine H. Sprague (Appointive), concurred in by Director H. Joe Selby (Acting Comptroller of the Currency), that Corporation business required its consideration of the matters on less than seven days' notice to the public; that no earlier notice of the meeting was practicable; that the public interest did not require consideration of the matters in a meeting open to public observation; and that the matters could be considered in a closed meeting pursuant to subsections (c)(8), (c)(9)(A)(ii), and (c)(9)(B) of the "Government in the Sunshine Act" (5 U.S.C. 552b(c)(8), (c)(9)(A)(ii), and (c)(9)(B)).

Dated: July 24, 1985.

Federal Deposit Insurance Corporation.

Hoyle L. Robinson,

Executive Secretary.

[FR Doc. 85-17975 Filed 7-25-85; 10:56 am]

BILLING CODE 6714-01-M

3

FEDERAL HOME LOAN BANK BOARD

"FEDERAL REGISTER" CITATION OF PREVIOUS ANNOUNCEMENT: Vol No. 50, Page No.—29794. Date Published—Monday, July 22, 1985.

PLACE: In the Board Room, 6th Floor, 1700 G St., NW., Washington, D.C.

STATUS: Open Meeting.

CONTACT PERSON FOR MORE INFORMATION: Ms. Gravlee (202-377-6679).

CHANGES IN THE MEETING: The meeting scheduled for Thursday, July 25, 1985, at 2:00 p.m. has been cancelled.

Jeff Sconyers,

Secretary.

No. 18, July 25, 1985.

[FR Doc. 85-18006 Filed 7-25-85; 2:38 pm]

BILLING CODE 6720-01-M

4

SYNTHETIC FUELS CORPORATION

Board of Directors

SUMMARY: Interested members of the public are advised that a meeting of the Board of Directors of the United States Synthetic Fuels Corporation will be held at the time, date and place specified below. This public announcement is made pursuant to the open meeting requirements of section 116(f)(1) of the Energy Security Act (94 Stat. 611, 637; 42 U.S.C. 8701, 8712(f)(1)) and Section 4 of the Corporation's Statement of Policy on Public Access to Board meetings.

MATTERS TO BE CONSIDERED: .

Open Session

I. Call to Order
II. Board Minutes
III. Consideration of Award of Financial Assistance to the Great Plains Project

TIME AND DATE: 3:15 p.m., July 30, 1985.

PLACE: 2121 K Street, NW. Room 503 Washington, D.C. 20586.

PERSON TO CONTACT FOR MORE INFORMATION: If you have any questions regarding this meeting, please contact Ms. Karen Hutchison, Director-Media Relations, at (202) 822-6455.

United States Synthetic Fuels Corporation.

March Coleman,

Assistant General Counsel Corporate & Litigation.

July 25, 1985.

[FR Doc. 85-17992 Filed 7-25-85; 12:49 pm]

BILLING CODE 0000-00-M

5

INTERSTATE COMMERCE COMMISSION.

TIME AND DATE: Time time of the conference has been changeg from 2:00 p.m., to 10:00 a.m., the date will remain the same, Wednesday, July 31, 1985.

PLACE: Hearing Room A, Interstate Commerce Commission 12th & Constitution Avenue, NW. Washington, D.C. 20423.

STATUS: Open Special Conference.

MATTER TO BE DISCUSSED: Ex Parte 320 (Sub-No. 3)—Product and Geographic Competition.

CONTACT PERSON FOR MORE INFORMATION: Robert R. Dahlgren, Office of Public Affairs, Telephone: (202) 275-7252.

James H. Bayne,

Secretary.

[FR Doc. 85-18071 Filed 7-26-85; 8:45 am]

BILLING CODE 7035-01-M

federal register

Monday
July 29, 1985

Part II

Environmental Protection Agency

Water Quality Criteria; Availability of Documents; Notice

ENVIRONMENTAL PROTECTION AGENCY

[OW-FRL-2871-6]

Water Quality Criteria; Availability of Documents

AGENCY: Environmental Protection Agency.

ACTION: Notice of final ambient water quality criteria documents.

SUMMARY: EPA announces the availability and provides summaries of nine ambient water quality criteria documents and national guidelines for criteria development. These criteria are published pursuant to section 304(a)(1) of the Clean Water Act. These water quality criteria may form the basis for enforceable standards.

Availability of documents: This notice contains: (1) Summaries of nine documents containing final ambient water quality criteria for the protection of aquatic organisms and their uses, (2) a summary of changes in the document entitled "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" (which is an updated and revised version of the Guidelines previously published at 45 FR 79341; November 28, 1980), and (3) responses to public comments on the Guidelines. Copies of the complete criteria documents and the revised Guidelines may be obtained from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161 (phone number ((703) 487–4650). A list of the NTIS publication order numbers for all 10 documents is published below. These documents are also available for public inspection and copying during normal business hours at: Public Information Reference Unit, U.S. Environmental Protection Agency, Room 2404 (rear), 401 M Street SW., Washington, D.C. 20460. As provided in 40 CFR Part 2, a reasonable fee may be charged for copying services. Copies of these documents are also available for review in the EPA Regional Office libraries. Copies of the documents are *not* available from the EPA office listed below. Requests sent to that office will be forwarded to NTIS or returned to the sender.

1. Ambient Water Quality Criteria for Ammonia—EPA 440/5–84–001; NTIS Number PB85–227114
2. Ambient Water Quality Criteria for Arsenic—EPA 440/5–84–033; NTIS Number PB85–227445
3. Ambient Water Quality Criteria for Cadmium—EPA 440/5–84–032; NTIS Number PB85–227031
4. Ambient Water Quality Criteria for Chlorine—EPA 440/5–84–030; NTIS Number PB85–227429
5. Ambient Water Quality Criteria for Chromium—EPA 440/5–84–029; NTIS Number PB85–227478
6. Ambient Water Quality Criteria for Copper—EPA 440/5–84–031; NTIS Number PB85–227023
7. Ambient Water Quality Criteria for Cyanide—EPA 440/5–84–028; NTIS Number PB85–227460
8. Ambient Water Quality Criteria for Lead—EPA 440/5–84–027; NTIS Number PB85–227437
9. Ambient Water Quality Criteria for Mercury—EPA 440/5–84–026; NTIS Number PB85–227452
10. Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses. NTIS Number PB85–227049.

FOR FURTHER INFORMATION CONTACT: Dr. Frank Gostomski, Criteria and Standards Division (WH–585), U.S. Environmental Protection Agency, 401 M Street SW., Washington, D.C. 20460, (202) 245–3030.

SUPPLEMENTARY INFORMATION:

Background

Section 304(a)(1) of the Clean Water Act (33 U.S.C. 1314(a)(1)) requires EPA to publish and periodically update ambient water quality criteria. These criteria are to reflect the latest scientific knowledge on the identifiable effects of pollutants on public health and welfare, aquatic life, and recreation.

EPA has periodically issued ambient water quality criteria, beginning in 1973 with publication of the "Blue Book" (Water Quality Criteria 1972). In 1976, the "Red Book" (Quality Criteria for Water) was published. On November 28, 1980 (45 FR 79318) and February 15, 1984 (49 FR 5831), EPA announced the publication of 65 individual ambient water quality criteria documents for pollutants listed as toxic under section 307(a)(1) of the Clean Water Act.

Today EPA is announcing the availability of nine individual water quality criteria documents which update and revise certain criteria previously published in the "Red Book" and in the 1980 ambient water quality criteria documents. The criteria documents for ammonia and chlorine replace criteria previously published in the 1976 "Red Book." The criteria documents for arsenic, cadmium, chromium, copper, cyanide, lead, and mercury replace the aquatic life criteria previously published in the 1980 ambient water quality criteria documents. Draft criteria documents were made available for public comment on February 7, 1984 (49 FR 4551). These final criteria have been derived after consideration of all comments received.

Dated: July 19, 1985.

Edwin C. Johnson,

Acting Assistant Administrator for Water.

Appendix A—Summary of Water Quality Criteria

1. Ammonia

Freshwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, freshwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration of ammonia does not exceed the recommended criterion more than once every three years on the average and if the one-hour average concentration does not exceed the recommended criterion more than once every three years on the average.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to ammonia exceeds the criterion. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

To protect freshwater aquatic life, the criteria for ammonia (in mg/liter un-ionized NH_3) are based upon ambient water temperature and pH with one-hour and four-day average concentrations provided. Criterion concentratons for the pH range 6.5 to 9.0 and the temperature range 0 °C to 30 °C are provided in the following tables. Total ammonia concentrations equivalent to each un-ionized ammonia concentration are also provided in these tables. There is limited data on the effect of temperature on chronic toxicity. EPA will be conducting additional research on the effects of temperature on ammonia toxicity in order to fill perceived data gaps. Because of this uncertainty, additional site-specific information should be developed before these criteria are used in wasteload allocation modelling. For example, the chronic criteria tabulated for non-salmonids at temperatures much below

20 °C are less certain than those tabulated at temperatures near 20 °C. Where the treatment levels needed to meet these criteria below 20 °C may be substantial, use of site-specific criteria is strongly suggested. Development of such criteria should be based upon site-specific toxicity tests.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the critierion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. The Agency acknowledges that the CCC stream flow averaging period used for steady-state wasteload allocation modelling may be as long a 30 days in situations involving POTWs designed to remove ammonia where limited variability of effluent pollutant concentration and resultant concentrations in receiving waters can be demonstrated.

In cases where low variability can be demonstrated, longer averaging periods for the ammonia CCC (e.g., 30-day averaging periods) would be acceptable because the magnitude and duration of exceedences above the CCC would be sufficiently limited. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

(1) ONE-HOUR AVERAGE CONCENTRATIONS FOR AMMONIA*

pH	0 C	5 C	10 C	15 C	20 C	25 C	30 C
A. Salmonids or Other Sensitive Coldwater Species Present							
Un-ionized Ammonia (mg/liter NH_3)							
6.50	0.0091	0.0129	0.0182	0.026	0.036	0.036	0.036
6.75	0.0149	0.021	0.030	0.042	0.059	0.059	0.059
7.00	0.023	0.033	0.046	0.066	0.093	0.093	0.093
7.25	0.034	0.048	0.068	0.095	0.135	0.135	0.135
7.50	0.045	0.064	0.091	0.128	0.181	0.181	0.181
7.75	0.056	0.080	0.113	0.159	0.22	0.22	0.22
8.00	0.065	0.092	0.130	0.184	0.26	0.26	0.26
8.25	0.065	0.092	0.130	0.184	0.26	0.26	0.26
8.50	0.065	0.092	0.130	0.164	0.26	0.26	0.26
8.75	0.065	0.092	0.130	0.184	0.26	0.26	0.25
9.00	0.055	0.092	0.130	0.184	0.26	0.26	0.26
Total Ammonia (mg/liter NH_3)							
6.50	35	33	31	30	29	20	14.3
6.75	32	30	28	27	27	18.6	13.2
7.00	28	26	25	24	23	16.4	11.6
7.25	23	22	20	19.7	19.2	13.4	9.5
7.50	17.4	16.3	15.5	14.9	14.6	10.2	7.3
7.75	12.2	11.4	10.9	10.5	10.3	7.2	5.2
8.00	8.0	7.5	7.1	6.9	6.8	4.8	3.5
8.25	4.5	4.2	4.1	4.0	3.9	2.8	2.1
8.50	2.6	2.4	2.3	2.3	2.3	1.71	1.28
8.75	1.47	1.40	1.37	1.38	1.42	1.07	0.83
9.00	0.86	0.83	0.83	0.86	0.91	0.72	0.58
B. Salmonids and Other Sensitive Coldwater Species Absent							
Un-ionized Ammonia (mg/liter NH_3)							
6.50	0.0091	0.0129	0.0182	0.026	0.036	0.051	0.051
6.75	0.0149	0.021	0.030	0.042	0.059	0.084	0.084
7.00	0.023	0.033	0.046	0.066	0.093	0.131	0.131
7.25	0.034	0.048	0.068	0.095	0.135	0.190	0.190
7.50	0.045	0.064	0.091	0.128	0.181	0.26	0.26
7.75	0.056	0.080	0.113	0.159	0.22	0.32	0.32
8.00	0.065	0.092	0.130	0.184	0.26	0.37	0.37
8.25	0.065	0.092	0.130	0.184	0.26	0.37	0.37
8.50	0.065	0.092	0.130	0.184	0.26	0.37	0.37
8.75	0.065	0.092	0.130	0.184	0.26	0.37	0.37
9.00	0.065	0.092	0.130	0.184	0.26	0.37	0.37
Total Ammonia (mg/liter NH_3)							
6.50	35	33	31	30	29	29	20
6.75	32	30	28	27	27	26	18.6
7.00	28	26	25	24	23	23	16.4
7.25	23	22	20	19.7	19.2	19.0	13.5
7.50	17.4	16.3	15.5	14.9	14.6	14.5	10.3
7.75	12.2	11.4	10.9	10.5	10.3	10.2	7.3
8.00	8.0	7.5	7.1	6.9	6.8	6.8	4.9
8.25	4.5	4.2	4.1	4.0	3.9	4.0	2.9
8.50	2.6	2.4	2.3	2.3	2.3	2.4	1.81
8.75	1.47	1.40	1.37	1.38	1.42	1.52	1.18
9.00	0.86	0.83	0.83	0.86	0.91	1.01	0.82

*To convert these values to mg/liter N, multiply by 0.822.

(2) 4-DAY AVERAGE CONCENTRATIONS FOR AMMONIA [1]

pH	0 C	5 C	10 C	15 C	20 C	25 C	30 C
A. Salmonids or Other Sensitive Coldwater Species Present							
Un-ionized Ammonia (mg/liter NH_3)							
6.50	0.0007	0.0009	0.0013	0.0019	0.0019	0.0019	0.0019
6.75	0.0012	0.0017	0.0023	0.0033	0.0033	0.0033	0.0033
7.00	0.0021	0.0029	0.0042	0.0059	0.0059	0.0059	0.0059
7.25	0.0037	0.0052	0.0074	0.0105	0.0105	0.0105	0.0105
7.50	0.0066	0.0093	0.0132	0.0186	0.0186	0.0186	0.0186
7.75	0.0109	0.0153	0.022	0.031	0.031	0.031	0.031
8.00	0.0126	0.0177	0.025	0.035	0.033	0.035	0.035
8.25	0.0126	0.0177	0.025	0.035	0.035	0.035	0.035
8.50	0.0126	0.0177	0.025	0.035	0.035	0.035	0.035
8.75	0.0126	0.0177	0.025	0.035	0.035	0.035	0.035
9.00	0.0126	0.0177	0.025	0.035	0.035	0.035	0.035
Total Ammonia (mg/liter NH_3)							
6.50	2.5	2.4	2.2	2.2	1.49	1.04	0.73
6.75	2.5	2.4	2.2	2.2	1.49	1.04	0.73
7.00	2.5	2.4	2.2	2.2	1.49	1.04	0.74
7.25	2.5	2.4	2.2	2.2	1.50	1.04	0.74
7.50	2.5	2.4	2.2	2.2	1.50	1.05	0.74
7.75	2.3	2.2	2.1	2.0	1.40	0.99	0.71
8.00	1.53	1.44	1.37	1.33	0.93	0.66	0.47
8.25	0.87	0.82	0.78	0.76	0.54	0.39	0.28
8.50	0.49	0.47	0.45	0.44	0.32	0.23	0.17
6.75	0.28	0.27	0.26	0.27	0.19	0.15	0.11
9.00	0.16	0.16	0.16	0.16	0.13	0.10	0.08
B. Salmonds and Other Sensitive Coldwater Species Absent							
Un-ionized Ammonia (mg/liter NH_3)							
6.50	0.0007	0.0009	0.0013	0.0019	0.0026	0.0026	0.0026
6.75	0.0012	0.0017	0.0023	0.0033	0.0047	0.0047	0.0047
7.00	0.0021	0.0029	0.0042	0.0059	0.0083	0.0083	0.0083
7.25	0.0037	0.0052	0.0074	0.0105	0.0148	0.0148	0.0148
7.50	0.0066	0.0093	0.0132	0.0186	0.026	0.026	0.026
7.75	0.0109	0.0153	0.022	0.031	0.043	0.043	0.043
8.00	0.0126	0.0177	0.025	0.035	0.050	0.050	0.050
8.25	0.0126	0.0177	0.025	0.035	0.050	0.050	0.050
8.50	0.0126	0.0177	0.025	0.035	0.050	0.050	0.050
6.75	0.0126	0.0177	0.025	0.035	0.050	0.050	0.050
9.00	0.0126	0.0177	0.025	0.035	0.050	0.050	0.050
Total Ammonia (mg/liter NH_3)							
6.50	2.5	2.4	2.2	2.2	2.1	1.46	1.03
6.75	2.5	2.4	2.2	2.2	2.1	1.47	1.04
7.00	2.5	2.4	2.2	2.2	2.1	1.47	1.04
7.25	2.5	2.4	2.2	2.2	2.1	1.48	1.05
7.50	2.5	2.4	2.2	2.2	2.1	1.49	1.06
7.75	2.3	2.2	2.1	2.0	1.98	1.39	1.00
8.00	1.53	1.44	1.37	1.33	1.31	0.93	0.67
8.25	0.87	0.82	0.78	0.76	0.76	0.54	0.40
8.50	0.49	0.47	0.45	0.44	0.45	0.33	0.25
8.75	0.28	0.27	0.26	0.27	0.27	0.21	0.16
9.00	0.16	0.16	0.16	0.16	0.17	0.14	0.11

* To convert these values to mg/liter N, multiply by 0.822.

[1] Site-specific criteria development is strongly suggested at temperatures above 20°C because of the limited data available to generate the criteria recommendation, and at temperatures below 20°C because of the limited data and because small changes in the criteria may have significant impact on the level of treatment required in meeting the recommended criteria.

Saltwater Aquatic Life

Data available for saltwater species are insufficient to derive a criterion for saltwater.

2. Arsenic

Freshwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, freshwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration of arsenic(III) does not exceed 190 μg/1 more than once every three years on the average and if the one-hour average concentration does not exceed 360 μg/1 more than once every three years on the average.

EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as "acid-soluble". Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method does not distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to arsenic(III) exceeds the criterion. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

Not enough data are available to allow derivation of numerical national water quality criteria for freshwater aquatic life for inorganic arsenic(V) or any organic arsenic compound. Inorganic arsenic(V) is acutely toxic to freshwater aquatic animals at concentrations as low as 850 μg/1, and an acute-chronic ratio of 28 was obtained with the fathead minnow. Arsenic(V) affected freshwater aquatic plants at concentrations as low as 48 μg/1. Monosodium methanearsenate (MSMA) is acutely toxic to aquatic animals at concentrations as low as 1,900 μg/1 but no data are available concerning chronic toxicity to animals or toxicity to plants.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 ro 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA. 1985).

Saltwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical

National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, saltwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration of arsenic(III) does not exceed 36 μg/1 more than once every three years on the average and if the one-hour average concentration does not exceed 69 μg/1 more than once very three years on the average.

EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as "acid-soluble". Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method does not distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to arsenic(III) exceeds the criterion. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

Very few data are available concerning the toxicity of any form of arsenic other than inorganic arsenic(III) to saltwater aquatic life. The available data do show that inorganic arsenic(V) is acutely toxic to saltwater animals at concentrations as low as 2,319 μg/l and affected some saltwater plants at 13 to 56 μg/l. No data are available concerning the chronic toxicity of any form of arsenic other than inorganic arsenic(III) to saltwater aquatic life.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steadystate models for unstressed and stressed systems respectively. These matters are discußsed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

3. Cadmium

Freshwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, freshwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration (in μg/l) of cadmium does not exceed the numerical value given by $e^{(0.7852[\ln(\text{hardness})]-3.490)}$ more than once every three years on the average and if the one-hour average concentration in (μg/l) does not exceed the numerical value given by $e^{(1.128[\ln(\text{hardness})]-3.828)}$ more than once every three years on the average. For example, at hardnesses of 50, 100 and 200 mg/l as $CaCo_3$ the four-day average concentrations of cadmium are 0.66, 1.1 and 2.0 μg/l, respectively, and the one-hour average concentrations are 1.8, 3.9 and 8.6 μg/l. If brook trout, brown trout, and striped bass are as sensitive as some of the data indicate they might not be protected by this criterion.

EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as "acid-soluble". Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method does not distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to cadmium exceeds the criteria. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Based Toxics Control (U.S. EPA, 1985).

Saltwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, saltwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration of cadmium does not exceed 9.3 μg/L more than once every three years on the average and if the one-hour average concentration does not exceed 43 μg/L more than once every three years on the average. The little information that is available concerning the sensitivity of the American lobster to cadmium indicates that this important species might not be protected by this criterion.

EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as "acid-soluble". Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method does not distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to cadmium exceeds the criteria. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxic Control (U.S. EPA, 1985).

4. Chlorine

Freshwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, freshwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration of total residual chlorine does not exceed 11 μg/1 more than once every three years on the average and if the one-hour average concentration does not exceed 19 μg/1 more than once every three years on the average.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to chlorine exceeds the criteria. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

Saltwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that saltwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration of chlorine-produced oxidants does not exceed 7.5 μg/1 more than once every three years on the average and if the one-hour average concentration does not exceed 13 μg/1 more than once every three years on the average.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to chlorine exceeds the criteria. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

5. Chromium

Freshwater Aquatic Life

Chromium (III). The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly when a locally important species is very sensitive, freshwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration (in μg/l) of chromium (III) does not exceed the numerical value given by $e^{(0.8190[\ln(\mathrm{Hardness})+1.561)}$ more than once every three years on the average and if the one-hour average concentration (in μg/l) does not exceed the numerical value given by $e^{(0.8190(\mathrm{hardness}))+3.688}$ more than once every three years on the average. For example, at hardnesses of 50, 100, and 200 mg/1 as $CaCo_3$ the four-day average concentrations of chromium(III) are 120, 210, and 370 μg/l and the one-hour average concentrations are 980, 1,700, and 3,100 μg/l.

Chromium(VI). The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species in very sensitive, freshwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration of chromium(VI) does not exceed 11 μg/l more than once every three years on the average and if the one-hour average concentration does not exceed 16 μg/l more than once every three years on the average.

EPA believes that the measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as "acid-soluble". Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method does not distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to chromium exceeds the criteria. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

Saltwater Aquatic Life

Chromium(III). No saltwater criterion can be derived for chromium(III), but 10,300 μg/l is the EC50 for eastern oyster embryos, whereas 50,400 μg/l did not affect a polychaete worm in a life-cycle test.

Chromium(VI). The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, saltwater aquatic organisms should not be affected unacceptably if the four-day average concentration of chromium(VI) does not exceed 50 μg/L more than once every three years on the average, and if the one-hour average concentration does not exceed 1,100 μg/L more than once every three years on the average. Data suggest that the acute toxicity of chromium(VI) is salinity dependent; therefore, the one-hour average concentration may be underprotective at low salinities.

EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as "acid-soluble". Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method does not distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to chromium exceeds the criteria. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

6. Copper

Freshwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possible where a locally important species in very sensitive, freshwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration (in μg/l) of copper does not exceed the numerical value given by $e^{(0.8545[\ln(\text{hardness})]-1.465)}$ more than once every three years on the average and if the one-hour average concentration (in μg/l) does not exceed the numerical value given by $e^{(0.9422[\ln(\text{hardness})]-1.464}$) than once every three years on the average. For example, at hardness of 50, 100, and 200 mg/l as $CaCO_3$ the four-day average concentrations of copper are 6.5, 12, and 21 μg/l respectively, and the one-hour average concentrations are 9.2, 18 and 34 μg/l.

EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as "acid-soluble". Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method does not distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to copper exceeds the criteria. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

Saltwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where locally important species is very sensitive, saltwater aquatic organisms and their uses should not be affected unacceptably if the one-hour average concentration of copper does not exceed 2.9 µg/l more than once every three years on the average.

EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as "acid-soluble". Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method does not distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to copper exceeds the criterion. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

7. Cyanide

Freshwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, freshwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration of cyanide does not exceed 5.2 µg/l more than once every three years on the average and if the one-hour average concentration does not exceed 22 µg/l more than once every three years on the average.

EPA believes that a measure such a free cyanide would provide a more scientifically correct basis upon which to establish criteria for cyanide. The criteria were developed on this basis. However, at this time, no EPA approved methods for free cyanide are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for free cyanide. Until available, however, EPA recommends applying the criteria using the total cyanide method. These criteria may be overly protective when based on the total cyanide method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which cyanide exceeds the criterion. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

Saltwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, saltwater aquatic organisms and their uses should not be affected unacceptably if the one-hour average concentration of cyanide does not exceed 1.0 µg/L more than once three years on the average.

EPA believes that a measurement such as free cyanide would provide a more scientifically correct basis upon which to establish criteria for cyanide. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a method are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as free cyanide. Until available, however, EPA recommends applying the criteria using the total cyanide method. These criteria may be overly protective when based on the total cyanide method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to cyanide exceeds the criterion. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

8. Lead

Freshwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, freshwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration (in µg/l) of lead does not exceed the numerical value given by $e^{(1.266[\ln(\mathrm{hardness})]-4.661)}$ more than once every three years on the average and if the one-hour average concentration (in µg/l) does not exceed the numerical value given by $e^{(1.266[\ln(\mathrm{hardness})]-1.416)}$ more than once every three years on the average. For example, at hardnesses of 50, 100, and 200 mg/l as $CaCO_3$ the 4-day average concentrations of lead are 1.3, 3.2, and 7.7 µg/l, respectively, and the one-hour average concentrations are 34, 83, and 200 µg/l.

EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as acid-soluble. Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method cannot distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to lead exceeds the criterion. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

Saltwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, saltwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration of lead does not exceed 5.6 µg/l more than once every three years on the average and if the one-hour average concentration does not exceed 140 µg/l more than once every three years on the average.

EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as acid-soluble. Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method does not distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to lead exceeds the criterion. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

9. Mercury

Freshwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, freshwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration of mercury does not exceed 0.012 µg/l more than once every three years on the average and if the one-year average concentration does not exceed 2.4 µg/l more than once every three years on the average. If the four-day average concentration exceeds 0.012 µg/l more than once in a three year period, the edible portion of consumed species should be analyzed to determine whether the concentration of methylmercury exceeds the FDA action level.

EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as "acid-soluble". Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method does not distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to mercury exceeds the criterion. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

Saltwater Aquatic Life

The procedures described in the "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses" indicate that, except possibly where a locally important species is very sensitive, saltwater aquatic organisms and their uses should not be affected unacceptably if the four-day average concentration of mercury does not exceed 0.025 μg/l more than once every three years on the average and if the one-hour average concentration does not exceed 2.1 μg/l more than once every three years on the average. If the four-day average concentration exceeds 0.025 μg/l more than once in a three-year period, the edible portion of consumed species should be analyzed to determine whether the concentration of methylmercury exceeds the FDA action level.

EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved methods for such a measurement are available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as "acid-soluble". Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method does not distinguish between individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

The recommended exceedence frequency of three years is the Agency's best scientific judgment of the average amount of time it will take an unstressed system to recover from a pollution event in which exposure to mercury exceeds the criterion. Stressed systems, for example one in which several outfalls occur in a limited area, would be expected to require more time for recovery. The resilience of ecosystems and their ability to recover differ greatly, however, and site-specific criteria may be established if adequate justification is provided.

The use of criteria in designing waste treatment facilities requires the selection of an appropriate wasteload allocation model. Dynamic models are preferred for the application of these criteria. Limited data or other factors may make their use impractical, in which case one should rely on a steady-state model. The Agency recommends the interim use of 1Q5 or 1Q10 for criterion maximum concentration (CMC) design flow and 7Q5 or 7Q10 for the criterion continuous concentration (CCC) design flow in steady-state models for unstressed and stressed systems respectively. These matters are discussed in more detail in the Technical Support Document for Water Quality Based Toxics Control (U.S. EPA, 1985).

10. Summary of Revisions to "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses"

This revised version of the National Guidelines provides clarifications, additional details, technical and editorial changes from the guidelines published at 45 FR 79341–79347, November 28, 1980. These modifications are the result of comments received on the previous Guidelines and also reflect advances in aquatic toxicology and related fields. The major technical changes are:

1. The acute data required for freshwater animals has been changed to include more tests with invertebrate species.

2. The Final Acute Value is now defined in terms of Genus Mean Acute Values rather than Species Mean Acute Values previously defined. A Genus Mean Acute Value is the geometric mean of all the Species Mean Acute Values available for species in the genus. On the average, species within a genus are toxicologically much more similar than species in different genera, and so the use of Genus Mean Acute Values will prevent data sets from being biased by an overabundance of species in one or a few genera.

3. The Final Acute Value is now calculated using a method that is not subject to the bias encountered with the previous method.

4. The criterion now consists of two numbers—The criterion continuous concentration (CCC) and the criterion maximum concentration (CMC).

a. The criterion continuous concentration is now used as a four-day average, rather than as a 24-hour average.

b. The criterion maximum concentration is now used as a one hour average, rather than a "not-to-be-exceeded" value.

c. Neither of these values should be exceeded more than once every three years on the average.

d. Instead of being equal to the Final Acute Value, the criterion maximum concentration is now obtained by dividing the Final Acute Value by 2. The Final Acute Value is intended to protect 95 percent of a group of diverse species, unless an important species is more sensitive. However, a concentration that would severely harm 50 percent of the fifth percentile or 50 percent of a sensitive important species cannot be considered to be protective of that percentile or that species. Dividing the Final Acute Value by 2 is intended to result in a concentration that will not severely adversely affect too many of the organisms.

5. When available, 96-hour EC50, based on the percentage of organisms immobilized plus the percentage of organisms killed are used instead of 96-hour LC50, for fish; comparable EC50 values are used instead of LC50, for other species.

6. The requirements for using the results of tests with aquatic plants have been made more stringent.

Two appendices (Appendix 1 and 2) were added as part of the guidance. Appendix 1 was added to aid in determining whether a species should be considered resident in North America and its taxonomic classification. Appendix 2 provides guidance for calculating a Final Acute Value.

Appendix B—Response to Comments on "Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses"

Introduction—Most "Comments" Listed Below Are Summaries of Individual Comments Which Expressed Similar Points of View

1. Comment—Criteria should only apply outside the mixing zone, not at the end of the pipe or within the mixing zone.

Response—EPA is issuing guidance on mixing zones in the Technical Support Document for Water Quality-based Toxics Control (Office of Water, 1985), hereafter referred to as the TSD. Because one of the two concentrations in each criterion is based on acute toxicity, it might be appropriate to use this concentration from a national or a site-specific criterion when establishing mixing zone standards.

2. Comment—Derivation of water quality criteria for the protection of aquatic organisms and their uses should adequately take into account such things as the precision and accuracy of available methods for measuring concentrations of pollutants, economic and social considerations, etc.

Response—These criteria are intended to be the best scientific judgment of exposures that can be tolerated by aquatic organisms and their uses. Other considerations can be used in the establishment of standards, permits, etc., where permitted by law. The criteria themselves must be based solely on biological, ecological, and toxicological data concerning the sensitivities of the organisms and their uses. Technological and economic feasibility are not considered in derivation of water quality criteria.

3. Comment—Laboratory data cannot replace experience in the real world.

Response—EPA certainly agrees. Unfortunately few field data are good enough to be useful in deriving national water quality criteria. It is more likely that field data can be used on a site-specific basis to demonstrate whether a criterion, standard, or permit is underprotective. However, in order for field data to be useful, the studies must be designed and executed appropriately. Too many field studies have limited utility because one or more important aspects were not dealt with in a manner that was appropriate to the specific situation of concern.

4. Comment—These Guidelines are incomplete because they do not include protection of human health.

Response—Water quality criteria can be derived to protect a variety of uses and subuses. These Guidelines are only intended to deal with protection of aquatic organisms and their uses. The Guidelines are intended to ensure that the use of aquatic organisms is not subject to restrictions because of exceedence of FDA action levels. Protection of human health is the subject of "Guidelines and Methodology Used in the Preparation of Health Effect Assessment Chapters of the Consent Decree Water Criteria Documents" (U.S. EPA, FR 45: 79347–79357, November 28, 1980).

5. Comment—EPA should provide implementation guidance concerning such things as mixing zones, wasteload allocation, and compliance monitoring.

Response—EPA is providing such guidance in the TSD.

6. Comment—The criteria do not adequately deal with fluctuating concentrations.

Response—EPA has examined the question of fluctuating concentrations and has revised the expression of the criteria to take into account the data that are available concerning relative effects caused by constant and fluctuating concentrations.

7. Comment—The Guidelines do not deal with simultaneous exposure to more than one pollutant.

Response—This is true and is because (a) few useful data are available, (b) the data that are available do not allow the development of useful principles, and (c) there are so many possible combinations of two or more pollutants and each can be present at a variety of concentrations. To deal with such situations, EPA has developed the toxicity based (whole effluent) approach described in the TSD.

8. Comment—EPA should develop warmwater and coldwater criteria, regional criteria, etc.

Response—EPA knows of no way to geographically subdivide aquatic species so that derivation of criteria for special circumstances would be worth the effort. Community composition changes gradually from area to area. Also, the distinction between warmwater and coldwater species is only reasonably useful because of all the coolwater species. Even the distinction between fresh water and salt water is vague because the waters and their respective fauna mix in upper estuaries. EPA does allow the derivation of site-specific criteria so that pertinent differences between waters, ecosystems, etc., can be appropriately taken into account.

9. Comment—All criteria issued in 1980 should be revised using the new Guidelines.

Response—EPA is selecting pollutants for which criteria should be derived using the new Guidelines. All the pollutants included in the Red Book and in the 1980 criteria documents, as well as other pollutants, are being considered. How many new or revised criteria are derived will depend on the availability of data and resources.

10. Comment—The criteria do not deal with the effects of pH, dissolved oxygen, dissolved solids, temperature, etc., on toxicity and bioaccumulation.

Response—If data are available to demonstrate that a criterion can be quantitatively related to such a factor, then the criterion should be related to that factor. Thus criteria for some metals are hardness-dependent and the criterion for ammonia is both pH and temperature-dependent. All criteria are subject to site-specific modification so that as many factors as desired can be appropriately taken into account.

11. Comment—Criteria do not deal with uptake from food.

Response—This is a potential weakness for all pollutants, but it is particularly of concern for those that are or could be limited by FDA action levels or effects on wildlife predators. When this is a potential problem for an existing discharge, the most pertinent information can be obtained by analyzing edible tissue of appropriate exposed species for the pollutant of concern.

12. Comment—EPA should make available its rationale for selecting pollutants for which criteria are to be derived.

Response—EPA is developing a process that appropriately takes into account factors relating to both exposure and effects in the selection of chemicals.

13. Comment—The available data are biased to a few families and toward northern and eastern species.

Response—Although EPA desires more data from tests with southern and western species, EPA knows of no reason to believe that such species would be more or less sensitive to specific pollutants or to pollutants in general. Some of the species for which data are available are widely distributed. The requirement that acute values be available for aquatic animals in at least eight different families ensures that there is a reasonable amount of diversity in the data set.

14. Comment—Use of Family Mean Acute Values will lower criteria.

Response—When EPA calculated the Final Acute Value (FAV) from Species Mean Acute Values, some commentors felt that EPA was allowing the criteria to be unfairly influenced because data were available for numerous species in some sensitive families. When EPA proposed to use Family Mean Acute Values, some commentors felt that EPA was inappropriately causing the criteria to be higher by reducing the number of MAVs available. EPA has decided to calculate the FAV from Genus Mean Acute Values because species within a genus appear to be toxicologically indistinguishable. This decision also reduces the impact of having data available for numerous species in the same family, but does not reduce the number of MAVs as much as would the use of Famly Mean Acute Values.

15. Comment—Alternative methods of calculating the FAV should be examined.

Response—EPA did consider all the potentially useful methods, and then studied in detail the methods that appeared promising. The method selected has several desirable properties, such as (1) the FAV generally rises as the number of MAVs increases, and (2) the FAV is rarely very far below the lowest MAV even when only eight or nine MAVs are available. The most serious defect is that calculation of confidence limits does not seem possible. On the other hand, methods that would allow calculation of the FAV and confidence limits have worse defects.

16. Comment—Elimination of some nonlethal endpoints from acute toxicity data was good.

Response—The oyster shell deposition test was eliminated because the effect was not considered to be a severe adverse effect.

17. Comment—Eight MAVs only provide a rough estimate of the fifth percentile.

Response—EPA certainly prefers more MAVs, but it was decided that the additional confidence in the FAV did not necessarily justify the additional cost, especially in the derivation of site-specific criteria. EPA's focus was on kinds of species as well as numbers, and eight is not enough if the breadth requirements are not satisfied.

18. Comment—Many productive streams in Colorado, Oregon, and Pennsylvania contain natural background concentrations above criteria for at least one metal.

Response—The productivity of some pristine bodies of water might be depressed if the background concentrations of some materials are too high. Assuming, however, that this is not the case for these streams in Colorado, Oregon, and Pennsylvania, it is likely that the reported metal concentrations are for total metal, which measures some forms of metals which are not toxic and are not likely to become toxic under natural conditions. EPA is interested in use of a measurement such as "acid-soluble" which should give a more accurate measurement of toxicologically available forms of metals.

19. Comment—EPA should define what it means by "fishable".

Response—EPA has expanded its explanation in the Introduction to the Guidelines of the concept of protection of aquatic organisms and their uses.

20. Comment—The preferred duration of acute tests with daphnids and midges should be 48 hours.

Response—EPA has changed its preference from 96 hours, which would require feeding during acute tests with most, if not all, daphnids and midges, to 48 hours with no feeding of the animals during the test.

21. Comment—The FAV is too dependent on the number of MAVs in the data set.

Response—EPA considers the general relationship between the FAV and the number of MAVs in the data set to be a positive feature of the procedure used to calculate the FAV. As more is known about the sensitivities of aquatic animals to the pollutant of concern, the FAV should be more often determined by interpolation rather than extrapolation. This is a property of the definition of the FAV as corresponding to the fifth percentile; any method used to estimate the concentration corresponding to the fifth percentile will have the same feature. An acute value for a new species will lower, rather than raise, the FAV if the new species is sensitive enough.

22. Comment—The FAV is biased because most tests are with sensitive species.

Response—The range of values available for some materials indicates that at least some tests are conducted with resistant species. In addition, occasionally a species that is usually considered sensitive is found to be resistant to a test material. Usually when more than twenty MAVs are available, the FAV is higher than the lowest MAV. On the other hand, the lowest MAV is sometimes for an important species such as the rainbow trout.

23. Comment—Use of Family Mean Acute Values increases the chances that some species will not be protected.

Response—The same comment applies to the use of Genus Mean Acute Values, but national criteria are not intended to protect all species. Even though Genus Mean Acute Values are used, the FAV is lowered to protect important species when necessary.

24. Comment—Only lethality should be accepted as an acute effect.

Response—Any severe adverse effect on fifty percent of the individuals in a population should be considered unacceptable to the species.

25. Comment—A statistically acceptable test for identifying outliers is needed.

Response—A very sensitive or very resistant species might be a statistical outlier, but not a toxicological outlier. Statistics can only identify data that are statistically inconsistent, based on the statistical test used, with the bulk of the data. Even sampling from a prepared normally distributed set of values will occasionally select a very extreme value. Statistical and toxicological comparisons can identify values that should be examined closely and possibly retested, but only rarely should a value be discarded just because it is a statistical outlier.

26. Comment—The FAV should be calculated using a method that properly weights all data points.

Response—The method used to calculate the FAV does use all of the data in the calculation of the cumulative probabilities. The four lowest MAVs and their cumulative probabilities are then used to estimate the FAV by interpolation or extrapolation because these MAVs provide the best information about the location of the fifth percentile. Parametric methods using all the MAVs make the FAV too dependent on the assumption of a particular distribution and allow the data for resistant species to have too much effect on the prediction on the location of the fifth percentile.

27. Comment—The factor of 2 should be justified.

Response—It is not reasonable to consider a genus at the fith percentile to be adequately protected if fifty percent of the individuals of that genus are killed or otherwise severely adversely affected. It is also unacceptable to consider that an important species is adequately protected if fifty percent of that species are killed or otherwise severely affected. Division of the FAV by a factor of two is intended to ensure that substantially less than fifty percent of the individuals are affected.

28. Comment—Data from static acute tests should not be used.

Response—Although data from flow-through tests in which the concentrations of test material were measured are preferable for all test materials and might be necessary for some highly volatile or rapidly hydrolyzed materials, static acute tests do provide useful data on many materials.

29. Comment—A species cannot be considered protected if its most sensitive life stage is not protected.

Response—EPA agrees and now specifies that when available data for a species indicate that one or more life stages are more sensitive than another life stage, only data for the sensitive life stage(s) should be used in the calculation of the Species of Mean Acute Value.

30. Comment—Ecologically important species should be specifically protected.

Response—EPA does not feel that the concept of "ecologically important species" has been well enough defined or supported for it to be used in the derivation of national water quality criteria. On a site-specific basis, it might be appropriate to use a broader concept of important species than what is used in the derivation of national criteria.

31. Comment—National criteria should not be lowered to protect important species.

Response—EPA feels that some species are so commercially or recreationally important that most people would want these species protected in most bodies of water in which they exist.

32. Comment—If a criterion is lowered to protect an important species, more data should be required on that species.

Response—Criteria are not usually lowered to protect an important species unless the tests with that species were flow-through and the concentrations of test materials were measured.

33. Comment—Explain "socially important species".

Response—This concept has been deleted from the Guidelines, but it was used to cover such things as rare and endangered species.

34. Comment—The chronic data should be divided into four categories (reproduction, growth, mortality, and other) and the most sensitive used to derive the criterion.

Response—A life-cycle test covers effects on all life stages. In addition, different effects might be most sensitive for different species.

35. Comment—The interchanging of acute-chronic ratios (ACRs) between fresh and salt water should be justified.

Response—If the data themselves do not justify it, the ACRs are not used together.

36. Comment—Use of an acute-chronic ratio to calculate a Final Chronic Equation was not mentioned.

Response—Division of a Final Acute Equation by an acute-chronic ratio will automatically result in a Final Chronic Equation. This has been added to the Guidelines.

37. Comment—Chronic tests with daphnids should not have to last at least 21 days.

Response—EPA does not feel that the available data justify the acceptance of shorter tests for all test materials.

38. Comment—The Final Acute-Chronic Ratio should never be arbitrarily set at 2.0.

Response—EPA feels that it is appropriate in two situations to set the Final Acute-Chronic Ratio equal to the same number that is used to obtain the Criterion Maximum Concentration from the Final Acute Value. At present this number is 2. EPA feels that in both of these situations it is appropriate for the Final Chronic Value to be equal to the Criterion Maximum Concentration, and setting the Final Acute-Chronic Ratio equal to 2 is a convenient way to achieve this.

39. Comment—Acute-chronic ratios should not be applied to acute data obtained with larval invertebrates.

Response—This is one of the situations in which EPA feels it is appropriate to use an acute-chronic ratio of 2. The EC50 certainly cannot be considered an acceptable concentration for the species, but use of a ratio greater than 2 is probably not appropriate when the lower acute values were from tests with larval invertebrates.

40. Comment—A 30-day averaging period is more compatible with NPDES permits and the duration of chronic tests than a 24-hour averaging period.

Response—EPA has reexamined the issue of the durations of the averaging periods. Because of the way permit limits are derived, the duration of the averaging period in criteria is totally independent of any duration in a permit. And because organisms are usually exposed to nearly constant concentrations in laboratory tests and to fluctuating concentrations in the real world, the duration of the averaging period in criteria should be shorter than the duration of the test. The rationale for the selection of averaging periods for criteria is presented in the Introduction to the Guidelines. An explanation of the use of criteria in wasteload allocation, etc., is presented in the TSD.

41. Comment—Only published data should be used.

Response—EPA feels that all available data that are acceptable and pertinent should be used. On the other hand, EPA feels that it has a responsibility to make available all data that are used, and so it will not use any "privileged" data.

42. Comment—Is the percent lipid value being changed from 3 to 10 or 11?

Response—The value of 3 was used in the human health sections of the 1980 criteria documents, but was not used to derive water quality criteria for aquatic life. The values of 10 and 11 percent are based on newer data and are now used in place of the previous values of 15 and 16 percent in deriving water quality criteria for the protection of aquatic organisms and their uses.

43. Comment—"Other data" should only be used for deriving site-specific criteria.

Response—EPA feels that "other data" can be used in deriving national criteria under the circumstances specified.

44. Comment—More allowance should be made for deviations from the Guidelines when deriving criteria.

Response—The purpose of developing the Guidelines will be defeated if they are too flexible. EPA has presented as many options as it feels are desirable in the Guidelines. Further, it is stated in the Guidelines that, if the derived criterion is not consistent with sound scientific evidence, either a higher or a lower criterion should be derived using appropriate modifications of the Guidelines.

45. Comment—Better use should be made of field data.

Response—The Guidelines do allow the use of field data, but EPA does not know what guidance can be given concerning their use, nor does EPA see the need for such guidance.

46. Comment—Criteria should be based on the form of the chemical that is biologically available.

Response—This concept is certainly appealing, but the practical difficulties are substantial. For some pollutants such as cooper and mercury, it appears that more than one form is toxic and either the toxic forms have different toxicities or the toxic forms have different net accumulation rates. In addition, it is probably important to measure not only what is immediately biologically available, but also what can be readily converted from an unavailable to an available form. This is especially important because the measurement used to specify the criterion might also be used to measure the pollutant in effluents.

47. Comment—The Guidelines do not provide justification for many items.

Response—More explanatory material has been added, especially in the Introduction. However, a thorough justification of each item would require a consideration of nearly all aspects of aquatic toxicology. As a compromise, EPA has assumed that most users of the Guidelines have a reasonable background in aquatic toxicology.

48. Comment—Why is covariance analysis better for calculating a hardness slope?

Response—Covariance analysis weights the data for each species according to the data that are available for that species. The approximate manual procedure was only given to aid those people who do not have access to computerized statistical procedures. It has been found, however, that the results produced by the two methods sometimes do not agree very well, and that the manual version of covariance analysis is not too difficult for small data sets. Thus the approximate manual procedure has now been replaced by the manual version of covariance analysis. It is instructive to work through the manual version once in order to understand how covariance analysis handles the data in this situation.

49. Comment—The steady-state BCF should not be replaced by a higher value.

Response—This has been eliminated from the Guidelines because (a) it will probably be rarely observed in bioconcentration tests and if it is there will probably not be enough data available to determine whether it is real or is experimental error, and (b) the most likely cause is induced degradation or depuration, and organisms in the field will usually be exposed often enough that such induction will usually have taken place.

50. Comment—Derivation of criteria is too subjective.

Response—EPA has made the Guidelines as "cookbookish" as is technically acceptable. Unfortunately, aquatic toxicology is too complicated to allow simplistic answers to very many problems. The ranges of pollutants, species, and waters are so great that detailed instructions are often not valid for all situations.

51. Comment—Very few bodies of water are monitored more than once a month.

Response—Because of the way criteria are used, the important time to monitor bodies of water is during the critical condition that is the basis for the permit. The most common type of monitoring is compliance monitoring of an effluent, which is based directly on wasteland allocation considerations, and only indirectly on water quality criteria.

52. Comment—Protection of ninety-five percent of the species might not be enough.

Response—This is why EPA sometimes lowers criteria to protect important species.

53. Comment—EPA should not use whatever data are available if acceptable data are not available.

Response—EPA does not feel that the Guidelines allow the use of any unacceptable data.

54. Comment—The Guidelines are so conservative that national criteria will be met almost nowhere and site-specific criteria will have to be developed.

Response—As explained in the Introduction to the Guidelines, EPA feels that national criteria must be derived using a rationale that is reasonably conservative. The Guidelines do not try to protect all species at all times and places. If national criteria were derived to be less protective, any given site-specific criterion would have, for example, a 50–50 chance of being higher or lower, which is not really very useful information.

55. Comment—The Guidelines should not allow saltwater criteria for metals to be higher than the concentrations in the oceans.

Response—EPA feels that increasing the concentrations of metals above background concentrations will not necessarily cause unacceptable effects. On the other hand, in some places background concentrations might be high enough to cause unacceptable effects.

56. Comment—Only EPA analytical methods should be used in the specification of criteria.

Response—It would certainly be desirable to be able to deal with all problems in a timely manner so that EPA would not have to face the question of "Which should come first—the criteria or the EPA analytical method?" Those who establish EPA analytical methods need to know what methods are needed and how sensitive the methods should be. On the other hand, those who derive criteria are often told that the existing EPA methods do not measure the right forms or are not sensitive enough. Because criteria are meant to be based on the best available information and are not themselves enforceable, it does not seem necessary for water quality criteria to be restricted to the use of EPA analytical methods.

Specifically concerning metals, EPA believes that a measurement such as "acid-soluble" would provide a more scientifically correct basis upon which to establish criteria for metals. The criteria were developed on this basis. However, at this time, no EPA approved method for such a measurement is available to implement the criteria through the regulatory programs of the Agency and the States. The Agency is considering development and approval of methods for a measurement such as "acid-soluble". Until available, however, EPA recommends applying the criteria using the total recoverable method. This has two impacts: (1) Certain species of some metals cannot be analyzed directly because the total recoverable method cannot distinguish individual oxidation states, and (2) these criteria may be overly protective when based on the total recoverable method.

57. Comment—The Guidelines lack a consideration of the differences between the laboratory and natural environments.

Response—Some people argue that organisms are more sensitive in the laboratory than in the field and some argue the opposite. In spite of these and other arguments that criteria derived using these Guidelines are either always overprotective or always underprotective or sometimes one and sometimes the other, few direct data are available. The studies that have been conducted seem to indicate that the Guidelines are generally appropriate.

[FR Doc. 85–17886 Filed 7–26–85; 8:45 am]

BILLING CODE 6560–50–M